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PATENT

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	S. Allison et al.	:	Date: April 19, 2002
		:	
Serial No.:	09/067,599	:	IBM Corporation
		:	IP Law Dept. 9CCA/B002
Filed:	4/28/1998	:	P.O. Box 12195
		:	Res. Tri. Park, NC 27709
For:	Pattern Matching in	:	
	Communications Network	:	Group No.: 2177
		:	Examiner: S. Channavajjala

Assistant Commissioner for Patents
Washington, DC 20231

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APPEAL BRIEF

Sir:

This is an Appeal from the Final Rejection of Claims 15-38 of this patent application. An Appendix containing each of the rejected claims is attached.

I. REAL PARTY IN INTEREST

The real party of interest is the Assignee, International Business Machines

Corporation (IBM).

II. RELATED APPEALS AND INTERFERENCES

Appellant or their legal representative or assignee has no personal knowledge of other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

The present application is a CPA.

Claims 1-14 have been canceled.

Claims 15-38 are appealed.

IV. STATUS OF AMENDMENT

No amendments have been filed subsequent to the Final Rejection.

V. SUMMARY OF INVENTION

The present invention relates to a pattern matching function which is used to generate control signals which wake-up network devices (such as computers etc.) from a low power consumption state (sleep) to normal operational state. Preferably, the pattern matching function is implemented on the Network Interface Card (NIC) connecting the device to the network.

The mechanism, implementing the pattern matching function includes pattern RAM 8 (Figure 1), Mask RAM 12 and pattern match logic 11. The patterns against which data

from the network is to be matched are loaded into the pattern RAM by Device Driver 3 in Host 1. The mask which identifies the portion of a pattern in the Pattern RAM against which data from the network is compared is loaded into the mask RAM by the host. Based upon the setting (states) of bits in the Mask RAM, the pattern match logic selects patterns from the Pattern RAM, correlates the selected patterns with data from the network and generates a control signal if a match is determined. The control signal is used to awaken a host such as a personal computer (PC) etc. from a low-power (sleep) state to normal operational (wake) state.

The use of different memories to store the mask and patterns enable one to arrange the patterns and mask as set forth on page 7 of appellants' specification with the intended benefits set forth on page 8 of appellants' specification.

In addition, an address match function is provided. The address match function correlates the address of the station with an address from the network and outputs a second signal when a match occurs.

VI. ISSUES

This appeal presents three issues, to wit::

- I. Whether Claims 15-16, 19-20, 33 and 36 are anticipated (35 USC 102(e)) by U.S. Patent No. 5,778,000 (Dosiore et al.)?
- II. Whether Claims 33-34 are anticipated (35 USC 102(e)) by U.S. Patent No. 5,938,771 (Williams et al.)?
- III. Whether Claims 17-18, 21-32 and 37-38 are obvious (35 USC 103(a)) in view of U.S. Patent No. 5,778,000 (Dosiore et al.) and further in view of U.S. Patent No. 5,892,768 (Jeng)?

VII. GROUPING OF CLAIMS

The appeal presents three groups.

Group I includes Claims 15-16, 19-20, 33 and 36. The claims of Group I do not stand or fall together.

Group II includes Claims 33-34. The claims of Group II do not stand or fall together.

Group III includes Claims 17-18, 21-22 and 37-38. The claims of Group III do not stand or fall together.

VIII. ARGUMENT

The issues and related arguments are identified by the same symbol.

I.

Regarding Issue I., the examiner contends Claims 15-16, 19-20, 33 and 36 are anticipated (35 USC 102) by Dosiere et al. (U.S. Patent 5,778,000).

A. DOSIERE DOES NOT TEACH TWO (2) MEMORIES

Under 12. Of the Final Office Action mailed 10/22/2001 the examiner contends: "Dosiere specifically details first memory and second memory . . .".

The examiner's contention appears to be in error in that Dosiere teaches only one memory with references to different locations within said one memory (see for example Col. 2, lines 1-9, Col. 5, lines 22-22 etc.). These references recite " . . . second reference location . . . " never - - second memory - - as the examiner suggests. In fact, Dosiere at Col. 5, lines 21-22 states " . . . the first memory contents is a pointer to a second memory

location, . . .” This and other statements in Dosiere clearly supports Appellants’ position that Dosiere only discloses a single memory.

Claims 15, 16, 19 and 20 calls for - - first memory - -; second memory As argued above Dosiere teaches only a single memory. Therefore, Claims 15, 16, 19 and 20 are not anticipated by Dosiere.

In addition, Claims 16 and 20 are separately patentable in that they require the number of marked patterns be less than total number of patterns in said first memory. This feature gives the designer the option of matching data against a selective set of patterns rather than the whole set. The benefit is that the process can be expedited in that the machine can use less time to do selected pattern matching.

It should be noted that the recitation in Claims 16 and 20 is not disclosed or suggested in Dosiere because Dosiere only allows checking of one pattern which is a small synchronization pattern in a data stream. The small synchronization pattern is used to determine frame adjustment.

**B. DOSIERE DOES NOT TEACH MASK DATA IDENTIFYING PATTERNS
TO BE MATCHED**

Appellants contend Dosiere does not teach (i) mask data identifying patterns to be matched against data (Claims 15, 16, 19, 20), (ii) providing a set of patterns . . . (Claims 15, 16, 19, 20 33 and 36) and (iii) providing pointers for identifying the selected patterns.

U.S. Patent 5,778,000 (Dosiere) teaches a method and apparatus to recognize a small synchronization pattern in a data stream, so alignment of a frame can be determined. The patent allows the matching of only one pattern. The patent teaches removing a portion of data from the bit stream, the portion of data being a particular window size which is used to access a memory location whereat the stored information is used to address a second memory location in the same memory. The second memory location contains

additional information consisting of bit error counts, a bit pointer head mask value and tail mask value. The head mask value indicates how much of the pattern word preceded the window that was checked. The tail mask value indicates how much of the pattern word follows the window that was checked.

As can be seen from the above Dosiere does not teach mask data to identify the patterns to be matched against data. Head mask and tail mask disclosed in Dosiere are used differently from the mask data recited in Appellants' Claims 15, 16, 19 and 20 or pointers recited in Claims 33 and 36. As a consequence, these Claims are not anticipated by Dosiere.

Likewise, in Claims 33 and 36 pointers are provided to identify selected patterns. In Dosiere only one pattern can be matched. Therefore, there is no need for pointers as recited in the claims. Therefore, Claims 33 and 36 are patentable over the art of record.

C. THE LAW OF ANTICIPATION (35 USC 102(e))

35 USC 102(e), in part, states: "A person shall be entitled to a patent unless—the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent . . .". As interpreted by courts, anticipation, under 35 USC 102, requires the presence in a single prior art disclosing each and every element of a claimed invention. See *Lewmar, Inc. v. Barient, Inc.*, 827F.2d 744, 747, 3 USPQ 2d 1766, 1767 (Fed. Cir. 1987) and cases cited therein.

Because Dosiere does not teach or suggest the element set forth above the claims are not anticipated.

II.

As to Issue II., the examiner contends: Claims 33-34 are anticipated (35 USC 102(e)) by Williams et al. (U.S. Patent No. 5,938,771).

**D. U.S. PATENT 5,938,771 (WILLIAMS) DOES NOT DISCLOSE THE
PATTERN MATCHING METHOD (CLAIM 33) OR THE WAKE-UP
SIGNAL GENERATING METHOD (CLAIM 34)**

In the Williams patent Magic Packet Match Logic 62 (Fig. 2) and On Now Pattern Match logic 60 are used to detect Wake-Up pattern on a network. Williams does not teach how the method works in either the Magic Packet Match Logic 62 or the On Now Pattern Match Logic 60. Williams fails to teach the details of any pattern matching techniques. In contrast, Appellants' Claims 33 and 34 recite a set of process steps to be used to match patterns with data. None of the process steps including claim 33 (a) and (c) and Claim 34 (b) are disclosed in Williams.

As argued above and incorporated herein by reference a rejection under 35 USC 102(e) requires every element in the rejected claims must be shown in a single reference. Because Williams does not show the elements, especially those set forth above, of Claim 33 and Claim 34 the Claims are not anticipated. (See *Lewmar Marine, Inc. v. Barient, Inc.* opp. cited)

III.

As to Issue III., the examiner contends Claims 17-18, 21-32 and 37-38 are rejected under 35 USC 103(a) as being unpatentable over Dosiere et al (U.S. Patent 5,778,000) as applied to Claims 15 and 19 above and further in view of Jeng (U.S. Patent 5,892,768).

**E. REJECTION, UNDER 35 USC 103(a), IN VIEW OF DOSIERE AS
APPLIED TO CLAIMS 15 AND 19 ABOVE**

Appellants find this portion of the examiner's argument confusing and illogical. As a consequence appellants cannot respond to it. If the examiner wishes to pursue this ground of rejection appellants request further clarification and an opportunity to respond. Here is the confusion.

The rejection of Claims 17-18, 21-32 and 37-38 is based upon 35 USC 103(a) (obviousness) prior art relied upon is Dosiere et al. As applied to Claims 15 and 19 above. Claims 15 and 19 were rejected in view of Dosiere et al. but under 35 USC 102(e). Even though the same prior art (Dosiere et al.) was used to reject Claims 17-18, 21-32 and 37-38 and Claims 15 and 19, different sections of 35 USC were used as basis for the rejection. Applying the reference to rejected claims under 35 USC 103(a) is different from applying the reference under 35 USC 102(e). As a consequence the application of a reference to claims under 35 USC 102(e) cannot be used to reject claims under 35 USC 103(a). In the present situation the only application Dosiere to claims 15 and 19 is under 35 USC 102(e) and the same application cannot be used for a rejection under 35 USC 103(a).

If the examiner wishes to reject Claims 17-18, 21-32, and 37-38 under 35 USC 103(a) in view of Dosiere. The examiner is obliged to set forth reasons why an artisan viewing the teachings in Dosiere would render Appellants' Claims 17-18, 21-32 and 37-38 obvious. As a consequence the examiner has not made out a prima facie case of obviousness regarding Dosiere alone and the rejection should not stand.

The rejection of Claims 17-18, 21-32 and 37-38 under 35 USC 103(a) in view of Dosiere and Jeng will be addressed hereinafter.

F. REJECTION OF CLAIM 21

Claim 21 is rejected under 35 USC 103(a) as being unpatentable over Dosiere et al. in view of Jeng (U.S. Patent No. 5,892,768).

(i) It is Appellants' contention that even after the combination the resulting reference does not render Claim 21 obvious.

As argued above and incorporated herein by reference Dosiere does not teach first storage storing a set of patterns and second storage storing mask data identifying patterns in the first storage to be matched against data as is required by Claim 21. Jeng does not teach this feature. According to the examiner Jeng was cited for detailing a system which includes network interface circuit (page 6, lines 14-56, Final Office Action). As a consequence the examiner's combination could not generate an interface card that would render Claims 21 obvious.

(ii) In addition, Appellants argue the recited elements (not present in the prior art) provides a new structure which allows the storing of multiple masks in one storage and mask data in another storage. As a benefit the pattern match logic circuit is simpler in that the pattern RAM is read only once for identifying any one of the multiple patterns in the pattern storage (see Appellants' specification page 8, lines 1-9). Appellants contend novel structure with benefits are indicia of unobviousness. Therefore, the claim is patentable over the art of record.

G. REJECTION OF CLAIMS 17 AND 22

Claims 17 and 22 are patentable for reasons set forth under F.

H. REJECTION OF CLAIMS 18 and 29

Claims 18 and 29 are rejected under 35 USC 103(a) as being unpatentable over Dosiere (U.S. Patent 5,778,000) and Jeng (U.S. Patent 5,892,768).

(iii) Examiner does NOT make a prima facie case of obviousness as to Claims 18 and 29.

The examiner's argument in support of the rejection is set forth under 20. of the Final Office Action. It is not clear how the examiner is using Dosiere and Jeng to form a combination which renders the claims obvious. Arguably, the examiner summarizes what he believes Jeng and Dosiere teach. But the examiner does not say why such teachings would lead an artisan to form a combination which would render Claims 18 and 29 obvious. Absent such reasons which can be suggested in one of the references or logical concrete reasons from the examiner indicating why an artisan would form the combination the examiner fails to make out a prima facie case of obviousness and the rejection ought to be reversed.

IV. Combination Improper - No Motivation or Suggestion in Either Reference

Notwithstanding, the defect in H.(iii) Appellants contend combining the teachings of Dosiere and Jeng to render Claims 18 and 29 obvious is improper because there is no motivation in either reference to form the combination. Absent such motivation it is incumbent on the examiner to set out concrete and logical reasons why an artisan would form the combination that would render Claims 18 and 29 obvious. As argued under H.(iii) and incorporated herein by reference the examiner has not done so. Therefore, a prima facie case of obviousness is not made.

In Dosiere bits selected from a data stream define a window and is used to address a memory location in a first memory. If the selected bit matches bits at the selected location, the bits at the selected location addresses a second memory location in

the same memory. The second memory location contains additional information including any bit error counts, a bit pointer, head mask value and tail mask value. The head mask tells how much of the pattern word precedes the window that was checked. Likewise, the tail mask indicates how much of the pattern word follows the window that was checked.

In Dosiere only one synchronization pattern is checked. Therefore, there is no need for mask data to identify which pattern is picked for matching with data stream. In this regard Dosiere teaches away from Appellants' claims. As a consequence, an artisan would not form the examiner's combination based on the references.

An examiner cannot arbitrarily pick and choose elements from the prior art in a piecemeal fashion to construct the claimed invention without some direction from the prior art. See In re Donovan, 509 F.2d 554, 184 USPQ 414 (CCPA 1975). Where the art does not suggest the desirability of a combination, the combination is not obvious. In re Imperato, 486 F.2d 585, 179 USPQ 730 (CCPA 1973).

Reliance on appellants' disclosure is contrary to the requirements of 35 USC 103. As the court stated in In re Sponnoble, 160 USPQ 237, 243 (CCPA 1969): "The court must be ever alert not to read obviousness into an invention on the basis of the applicant's own statements; that is, we must view the prior art without reading into that art appellant's teachings. In re Murray, 46 CCPA 905, 268 F 2d 226, 122 USPQ 364; In re Sporck, 49 CCPA 1039, 301 F. 2d 686, 133 USPQ 360. The issue then is whether the teachings of the prior art would, in and of themselves and without the benefits of applicant's disclosure, make the invention as a whole, obvious. In re Leonor, 55 CCPA 1198, 395 F. 2d 801, 158 USPQ 20." (Emphasis Court)

This improper combination is also censored by the Board of Appeals in Ex parte Fleischmann, 157 USPQ 155 (1967). In that case, the examiner found it necessary to combine four references to reject certain claims under 35 USC 103, and a fifth reference to likewise reject another claim. The Board states its objection as follows: "After having

reviewed the stated rejection in the light of the prior art and considered the respective positions taken by the examiner and appellant, we have concluded that the combination of references as applied by the examiner to anticipate the claims is unwarranted.

While as an abstract proposition, it might be possible to select features from the secondary references, as the examiner has done, and mechanically combine them with the Mallin device to arrive at appellant's claimed combination, we find absolutely no basis for making such combination neither disclosed nor suggested in the **patents relied** upon. In view only appellant's specification suggests any reasons for combining the features of the secondary references with the primary reference and under the provisions of 35 USC 103 that does not constitute a bar "

The Board's position is consistent with other Courts. In *Simmonds Precision Products Inc. v United States*, 153 USPQ 465 1967), the Court of Claims quoted the U.S. Supreme Court' in Graham v John Deere Co. 248 USPQ 459 (1966) as defining several factual inquiries useful in resolving the question of obviousness under 35 USC 103, namely: "Under Sec. 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved."

The Court of Claims then rejected an "attempted combination of ...Smithror Schafete et al....with certain aspects of the Laboulais control system to meet the recital of element and function in Eddleman Claims" --- because such combination "requires hindsight view of the prior art." The Court then stated the following: "There is a temptation to read into the **prior art the teachings of the Eddleman** patent relative to avoiding the **effect of the dielectric** constant. However, prior disclosures should not **be combined to show** obviousness when there is no suggestion in **any of the disclosures** that the separate concept can be combined to produce the Eddleman gauge results.

The Rule of Law stating that numerous prior art **references** combined by the

Examiner must themselves suggest the Examiner's combination (rather than allowing the Examiner to rely on the Appellant's disclosure with hindsight in producing his combination) is based upon the fact that it is the combination and not the individual elements of the combination, **that** comprises the claimed invention.

Therefore, in In re Avery, 186 USPQ 161 (1975), the CCPA refused to accept the combination of two patents to invalidate certain claims. The Court's decision was based on the fact that the need to use a feature of the secondary reference was not present in the primary Magee et al reference. The Court states its position as follows: "Because Magee et al has no use for an inert gas in their process, we do not believe that it would be obvious to combine the disclosure of Magee et al and Parry. neither reference contains the slightest suggestion to what it discloses in combination with what is disclosed in the other."

In In re Skole, 187 USPQ 481 (1975) the CCPA reaffirms its previous holding of In re Schaffer, 108 USPQ 326 (1956) wherein the Court states: "References may be combined for the purpose of showing that a claim is unpatentable. However, they may not be combined indiscriminately, and to determine whether the **combination** of references is proper, the following criterion is often used: namely, whether the prior art suggests doing **what an applicant has** done ***. It is not enough for a valid rejection to view the prior art in retrospect once an applicant's disclosure is known. The art applied should be viewed by itself to see if it fairly disclosed doing what an applicant has done."

Finally, the Board of Appeals has censored the improper combination in Ex parte Clapp, 227 USPQ 972 (1985). In that case the examiner combined several references to reject all the claims under 35 USC 103. In reversing the examiner, the Board states its position as follows: "Presuming arguendo that the reference shows the elements or concepts urged by the examiner, the examiner has presented no line of reasoning, and we know of none, as to why the artisan viewing only the collective teachings of the references would have found it obvious to selectively pick and choose various elements and/or

concepts from the several references relied on to arrive at the claimed invention.*** To support the conclusion that the claimed combination is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed combination or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the reference.

It is appellants' position the references do not suggest any motivation for the combination. In addition, the examiner has not given any logical and concrete reasons for the combination. Therefore, the claims are unobvious.

V. The Resulting Combination of the Examiner does NOT Suggest Appellants' Claims 18 and 29.

As argued under F.(i) and incorporated herein by reference even after the examiner's combination the resulting reference does not render Claims 18 and 29 obvious. In addition to the references not teaching two memories with one storing patterns and one storing mask bits to identify patterns to be matched the references do not teach first state machine and second state machine performing functions set forth in the claims.

In fact, Figure 4, Col. 8, lines 39 - col. 9 (Dosiere) give an implementation for Dosiere's invention without ever identifying the use of state machines as set forth in applicants' claims. As a consequence the examiner's combination discloses an invention different from the one claim by appellants. Therefore, Claims 18 and 19 are not obvious.

By virtue of these differences Appellants' claim provides a novel structure. The novel structure includes the use of state machines as claimed. The state machines make the structure design simpler than it would otherwise be. Simplicity is always a benefit in design of these types. Therefore, a new structure and benefits are indicia of non-obviousness.

I. REJECTION OF CLAIM 23

Claim 23 is rejected under 35 USC 103(a) as being unpatentable over Dosiere in view of Jeng. This rejection appears to be defective because the examiner fails to give a basis why the combination renders Claim 23 obvious. Under paragraph 21. of the Final Office Action the examiner seems to suggest computer coupled to the system interface is an inherent aspect of Jeng's teachings. Also the examiner suggests Dosiere teaches patterns and mask. These arguments without stating why an artisan would combine them in such a way to render claim 23 obvious is not sufficient to make out a prima facie case of obviousness. As a consequence the rejection does not meet statutory requirement or long standing Patent Office practice and should be reversed.

Notwithstanding the defect of the rejection, Claim 23 is patentable over Dosiere and Jeng for reasons set forth herein.

VI. Examiner Erred In Construing Dosiere and Jeng

As to Dosiere the examiner states "Dosiere teaches patterns¹ and mask data".

Appellants would like to point out that Dosiere only teaches about a single pattern and not patterns (plural). There is no need for Dosiere to teach patterns because its invention relates to detecting a synchronizing pattern within a data stream. The reference to patterns is gleaned from Appellants' disclosure and claims.

Regarding Jeng, appellants' question the examiner's conclusion that it inherently teaches computer coupled to the system interface. Appellants' unreadiness with this notion is partly based upon the invention which is disclosed in Jeng. The Jeng invention relates to an adapter which converts ethernet packet signals from an ethernet port to HDSL frames signal which is forwarded to a T1/E1 HDSL line 14 and visa versa. Since

¹ Underlining being done by Appellants.

the invention relates to conversion between different transmission lines there is no inherent teaching of a computer. Even if one could draw the examiner's conclusion² Jeng still would not meet the teachings of Claim 23 because the claim calls for the computer to download a set of patterns and mask data, none of which is disclosed in Dosiere or Jeng.

Being able to change patterns and masks under program control afford the user the benefit of the ability in that loading different patterns allows the machine to respond to different patterns. This benefit together with the novel structure are evidence of unobviousness.

In addition appellants argue Claim 23 is patentable because the combination of references is improper and even after the combination the resulting reference lacks features of the claim. The arguments set forth under IV. and V. above are equally applicable and are incorporated herein by reference.

J. REJECTION OF CLAIM 24

Claim 24 is rejected under 35 USC 103(a) as being unpatentable over Dosiere et al. (U.S. Patent No. 5,778,000) in view of Jeng et al. (U.S. Patent 5,892,768). In 22. of the Final Office Action the examiner contends " . . . Jeng teaches 'network interface' [Fig. 2], Jeng teaches for example destination address and source address [see col. 1, lines 50-67], also Jeng teaches for example each packet of data associated with signal bit [see col. 2, lines 51-57], therefore, Jeng teaches the limitation of claim 24.

VII. Examiner Erred in Construing Jeng

Appellants' contention is that Jeng does not disclose the teachings of Claim 24.

² A preposition to which Appellants do not agree.

Claim 24 calls for address match function logic circuit that correlates an address for the Network Interface Card and the receive address and generating a second control signal on the occurrence of a match. Contrary to the examiner's position, Jeng does not teach an address match function. Arguably, Jeng does disclose the format for an ethernet frame but fails to disclose an address match function as recited in the claim. In fact, there is no need for Jeng to disclose an address match function since the Jeng reference relates to mere conversion of ethernet packets to HDSL frames. In this type of conversion there is no need to have an address match function.

Because the combination does not teach the address match function then the combination would not render claim 24 obvious because the element that is required in claim 24 is missing from the examiner's combination.

In addition, appellants argue that by providing the address match function the station will only process frames that are transmitted to it and not waste time processing other frames that were forwarded to other stations. The selective processing of frames due to the address match function provides a benefit which enhances the performance of a workstation embodying the teaching of appellants' invention. As argued above different structure (i.e. the address match function) with benefits are clear indicia of unobviousness. As a consequence, claim 24 is patentable in its own right over the art of record.

K. REJECTION OF CLAIM 26

Claim 26 is rejected under 35 USC 103(a) as being unpatentable over Dosiere et al. (U.S. Patent No. 5,778,000) in view of Jeng (U.S. Patent No. 5,892,768). Under 23. of the Final Office Action the examiner states: "... Jeng details 'patterns are arranged contiguously in a pattern storage' [see Fig. 2, elements 50, 52]".

As argued above and incorporated herein by reference the examiner fails to make

a prima facie showing of obviousness since the examiner does not describe in what way the combination renders claim 26 obvious. As a consequence, the rejection of claim 26 should be reversed for failure to provide support as is mandated by the statute and longstanding practice in the Patent Office.

Notwithstanding the defect appellants argue that Jeng does not disclose the teachings of claim 26 which requires that the patterns are arranged contiguously in the pattern storage. In Jeng elements 50 and 52 are buffer memories. Buffer memory 50 is used to receive, store and process ethernet packets being sent to the T1/E1 HDSL. Similarly, buffer memory 52 is used to receive, store and process T1/E1 HDSL frames being sent to the ethernet (see Jeng, Col. 4, lines 1-5). As argued above and incorporated herein by reference, because Jeng does not teach the features set forth in claim 26 the examiner's combination would not render appellants' claim 26 obvious since a necessary element of the claim is missing in the examiner's combination.

In addition, by arranging the patterns in sequential order several patterns can be matched against data from the network in a relatively shorter time than if they were dispersed throughout the memory. As argued above the structure of arranging the pattern as set forth in the claim and the benefits are indicia of unobviousness and render claim 26 patentable over the art of record.

L. REJECTION OF CLAIMS 27-28

Claims 27-28 are rejected under 35 USC 103(a) as being unpatentable over Dosiere in view of Jeng. The examiner's contention, in support of the rejection, is set forth under 24. of the Final Office Action which in part states: "... Dosiere teaches patterns and mask data [see Fig. 1, Col. 2, lines 61-67, Col. 3, lines 1-27, Col. 4, lines 26-29], specifically, m-bit set forms part of n-bit pattern [see col. 2, lines 45-50, col. 5, lines 43-48,

lines 65-67], Jeng teaches network interface [Fig. 2]”.

Appellants’ first contention is that the examiner fails to provide a prima facie case in that the argument does not state why an artisan viewing these two references would form the combination. Therefore, as argued above and incorporated herein by reference the rejection should be reversed.

Notwithstanding, appellants argue that claims 27-28 are patentable in that they claim a specific relationship between the mask bits and the n patterns in the pattern RAM. In particular, the claim calls for an arrangement in which m-bits word of the mask contain mask bit for words in n patterns. It should be noted that this teaching is not present in Dosiere since Dosiere relates only to a single pattern and not multiple patterns as is set forth in claims 27-28. As a consequence, the examiner’s combination is missing an element in appellants’ claim and as such the combination would not suggest appellants’ claims 27 or 28.

In addition, appellants argue that by providing a mask word with m-bits being mask bits for words of n pattern less complicated logic can be used to determine the pattern to be matched against data coming in from the network. This is so because for one reading of the mask RAM there are enough bits to identify n patterns in the pattern RAM. In this specific example there are eight patterns in the pattern RAM and each mask entry has sufficient bits to select the eight patterns. By reading the mask RAM only once the task of matching against selected pattern goes much quicker than it would be if multiple masks have to be read from the mask RAM. As a consequence, the structure is novel with benefits. These are clear indicia of obviousness and as such Claims 27 and 28 are patentable over the art of record.

M. REJECTION OF CLAIMS 31-32

Claims 31-32 stand or fall with Claim 21. Therefore, the argument set forth above supporting the patentability of Claim 21 is equally applicable and is incorporated herein by reference.

N. REJECTION OF CLAIM 36

Claim 36 is rejected under 35 USC 103(a) as being unpatentable over Dosiere in view of Jeng. Under 26. of the Final Office Action the examiner's contention is directed to his interpretation of the Dosiere reference. This contention fails to point out reasons why the combination would render the claim obvious. Mere statements of what the examiner believes Dosiere teaches is not sufficient. As argued above and incorporated herein by reference, the rejection should be reversed for failure to comply with statutory requirement and longstanding Patent Office practice.

Notwithstanding the defect appellants believe Claim 36 is patentable over the art of record. Claim 36 calls for pointers which are mask bits to identify patterns within the pattern RAM. Dosiere does not teach this feature. In Dosiere a group of bits selected from the data is used as a window to an address in memory and additional information in memory points to information relative to the pattern to be detected. This teaching is in apposite or completely different from mask bit to identify specific pattern in the mask RAM. Due to the difference in these teachings one does not render obvious the other and as such Claim 36 is patentable in its own right.

In addition, appellants argue by using mask bits to identify patterns to be tested multiple patterns can be easily matched against a data stream as opposed to Dosiere in which only one pattern is being used. The different structure coupled with the benefits are

indicia of unobviousness.

O. REJECTION OF CLAIM 37

Claim 37 is rejected under 35 USC 103(a) as being unpatentable over Dosiere et al. in view of Jeng. Under 27. of the Final Office Action, the examiner contends: “. . . Dosiere teaches ‘32-bit with groups of 4 mask bits identifying one of the 8 patterns’ [col. 6, lines 42-48;]”.

As argued above and incorporated herein by reference this rejection should be reversed because the examiner failed to provide an argument why an artisan viewing the cited references would find Claim 37 obvious.

Notwithstanding, appellants contend that the examiner’s statement as to what Dosiere teaches appears to be in error. Dosiere does not teach 32-bit groups of 4 mask bits identifying one of the eight patterns. Dosiere teaches a frame word having a length of 32 bits with groups of 16 sequentially taken from the bit stream (see Dosiere col. 6, lines 43-48). Due to the erroneous characterization of Dosiere the examiner concluded that claim 37 is obvious in view of the teaching of Dosiere. Appellants argue that the Dosiere teaching is in apposite to the teaching of claim 37, therefore claim 37 is patentable over the art of record.

P. REJECTION OF CLAIM 25

Claim 25 is rejected under 35 USC 103(a) as being unpatentable over Dosiere in view of Jeng. Under 28. of the Final Office Action even though the examiner admits that Jeng et al does not teach or suggest claim 25 he contends that the teaching at col. 1, lines 53-56 of Jeng would suggest the arrangement set forth in Claim 25.

Contrary to the examiner's position, Appellants contend the teaching in Jeng relates to the format for a standard ethernet frame and an artisan viewing this teaching would not use it to configure the patterns in the pattern RAM as is set forth in claim 25. In other words, the teaching in Jeng refers to frame format whereas the teaching in claim 25 relates to arranging multiple patterns in a pattern RAM. Because the reference relates to different areas of technology one would not render the other obvious. Therefore, Claim 25 is patentable over the art of record.

In addition, by arranging the pattern in the RAM in the way suggested in the claim the selection of patterns within a multi-pattern system is made much simpler. As argued above, the novel structure together with benefit are evidence of unobviousness.

Q. REJECTION OF CLAIM 30

Claim 30 is rejected under 35 USC 103(a) as being unpatentable over Dosiere in view of Jeng. Under 29. of the Final Office Action the examiner seemed to rely on teachings at col. 1, lines 17-19 of Jeng to conclude that the invention set forth in claim 30 would be obvious in view of the teachings.

The information relied on in Jeng has to do with well known teaching regarding ethernet systems whereas claim 30 recites a method of addressing. The difference between the two is so distinct that an artisan reading the description of ethernet system in the reference would not arrive at the teaching in claim 30. In fact, the two are so different that one could argue the teaching in the reference is in apposite to that in claim 30. As a consequence, claim 30 is not obvious in view of the cited references and the rejection should be reversed.

Even though the examiner failed to address Claims 37 and 38, appellants contend that they are patentable over the art of record. Claims 37 and 38 call for arranging patterns

and mask bits to enhance multiple patterns matching. Appellants proffer that the novel structure and benefits are evidence of non-obviousness. As a consequence, Claims 37 and 38 are patentable over the art of record.

CONCLUSION

Based upon the above arguments, the appealed claims define patentable subject matter and are not made obvious by the cited prior art. As a consequence, the examiner's Final Rejection of Claims 15-38 should be reversed.

Respectfully Submitted,



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APPENDIX OF CLAIMS

The text of the claims involved in the appeal are:

- 1 Claim 15. A device for matching patterns against data comprising:
2 a first memory in which a set of patterns are stored;
3 a second memory that stores mask data identifying patterns in the first memory to
4 be matched against the data; and
5 pattern match logic circuit arrangement correlating marked patterns in said first
6 memory against the data and generating at least one control signal if a match occurs.
- 1 Claim 16. The device of Claim 15 wherein the marked patterns are fewer than the total
2 number of patterns in said first memory.
- 1 Claim 17. The device of Claims 15 or 16 wherein the data is received from a network.
- 1 Claim 18. The device of Claim 15 or 16 wherein the pattern match logic circuit
2 arrangement includes a first state machine for assembling data received from a network
3 into predetermined sizes and identifying beginnings and endings of data frames; and
4 a second state machine operatively coupled to the first state machine, said second
5 state machine including circuit that receives the predetermined sizes from the first state
6 machine and circuit that generates addresses for accessing the first memory and the
7 second memory, whereat pattern and mask data are to be read and used with the
8 predetermined sizes in generating the first control signal.

1 Claim 19. A method comprising the acts of:
2 providing in a first memory a set of patterns;
3 providing in a second memory mask data identifying patterns in the first memory to
4 be matched against data received from a network;
5 correlating the data against the marked pattern and generating a control signal if a
6 marked pattern matches the data.

1 Claim 20. The method of Claim 19 wherein marked patterns are fewer than the set of
2 patterns.

1 Claim 21. A network interface card including:
2 a system interface circuit arrangement;
3 a network interface circuit arrangement;
4 a first storage that stores a set of patterns;
5 a second storage that stores mask data identifying patterns in the first storage to be
6 matched against data; and
7 a pattern match logic circuit arrangement correlating marked patterns in said first
8 storage with the data and generating at least one first control signal if a match occurs
9 between one of the marked patterns and the data.

1 Claim 22. The network interface card of Claim 21 wherein the data is received from the
2 network.

1 Claim 23. The network interface card of claims 21 or 22 further including a host computer

2 coupled to the system interface, said host computer including software for downloading to
3 the network interface card the set of patterns and the mask data.

1 Claim 24. The network interface card of claims 21 or 22 further including address match
2 function logic circuit for correlating an address for the network interface card and a
3 received address and generating a second control signal on the occurrence of a match.

1 Claim 25. The network interface card of claims 21 or 22 wherein each pattern in the set of
2 patterns are arranged in 4 (four) bytes wide words and 128 byte sectors.

1 Claim 26. The network interface card of claim 25 wherein the patterns are arranged
2 contiguously in the Pattern Storage.

1 Claim 27. The network interface card of claim 25 wherein the mask data is arranged so
2 that each M-bits word of mask contains mask bits for words in N patterns, wherein
3 $M = \text{number of bits in a mask word}$ and $N = \text{number of patterns}$.

1 Claim 28. The network interface card of claim 27 wherein $M = 32$ and $N = 8$.

1 Claim 29. The network interface card of claim 21 wherein the pattern match logic circuit
2 arrangement includes a first state machine for assembling data received from the network
3 interface circuit arrangement into predetermined sizes and identifying beginnings and
4 endings of data frames; and

5 a second state machine operatively coupled to the first state machine, said second
6 state machine including circuit that receives the predetermined sizes from the first state
7 machine and circuit that generates addresses for accessing the pattern storage and mask

8 storage, whereat data are to be read and used with the predetermined sizes in generating
9 the first control signal.

1 Claim 30. The network interface card of claim 29 wherein the address generation circuit
2 uses the expression YYYxxxxx to determine the addresses for the Pattern RAM, wherein
3 xxxxx represents an index count and YYY represents states for a state machine.

1 Claim 31. The network interface card of claim 21 wherein the system interface circuit
2 arrangement includes a PCI Interface.

1 Claim 32. The network interface of claim 21 wherein the network interface circuit
2 arrangement includes Ethernet MII Interface.

1 Claim 33. A pattern matching method including the steps of:
2 (a) providing a set of patterns;
3 (b) providing data to be matched with selected patterns in said set of patterns;
4 (c) providing pointers for identifying the selected patterns;
5 (d) correlating the data with the selected patterns in step (c); and
6 (e) generating a Match signal if the data of step (d) and the selected patterns
7 match.

1 Claim 34. A method for using in a communications network to wake station connected to
2 the communications network said method including the steps of:
3 (a) providing, on a network interface card, multiple patterns against which data
4 from the communications network is to be matched;
5 (b) providing mask data indicating the patterns to be used;

- 6 (c) correlating each identified pattern with data received from the
7 communications network; and
8 (d) generating a Wake-Up signal if a match occurs in step (c).

1 Claim 35. The method of claim 34 further including the steps of

- 2 (e) a receiving station correlating a station address with an address received
3 with the data from the communications network; and

- 4 (f) generating the Wake-Up signal only if a match occurs in step e and a match
5 occurs in step c.

1 Claim 36. The method of claim 33 wherein the pointers include mask bits.

1 Claim 37. The method of claim 36 wherein the set includes eight patterns.

1 Claim 38. The method of claim 37 wherein the mask bits includes 32 bits with groups of
2 4 mask bits identifying one of the eight patterns.

S/N 09/067,599



Atty. Docket No. RA998-007

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I hereby certify that this paper and fee are being deposited with the United States Postal Service Express Mail Post Office to Addressee service under 37 CFR Sec. 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

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Karen Orzechowski

Signature of Person Mailing Paper and Fee

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: S. Allison et al.

Date: April 19, 2002

Serial No.: 09/067,599

IBM Corporation

Filed: 4/28/1998

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For: Pattern Matching in Communications
Network

Group No.: 2177

Examiner: S. Channavajjala

Asst. Commissioner for Patents
Washington, DC 20231

RECEIVED

APR 24 2002

**TRANSMITTAL OF APPEAL BRIEF
(PATENT APPLICATION-37 CFR 1.192)**

Technology Center 2100

Sir:

1. Transmitted herewith in triplicate is the APPEAL BRIEF in this application with respect to the Notice of Appeal filed on February 22, 2002.

2. STATUS OF APPLICANT

This application is on behalf of

X other than a small entity

 small entity

verified statement: attached already filed

3. FEE FOR FILING APPEAL BRIEF

Pursuant to 37 CFR 1.17(f) the fee for filing the Appeal Brief is:

___ Small entity \$160.00

X Other than a small entity \$320.00

Appeal Brief fee due: \$ 320.00_____

4. EXTENSION OF TERM

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136 apply.

___ (a) Application petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

<u>Extension (months)</u>	<u>Fee for other than a small entity</u>
___ one month	\$ 110.00
___ two months	\$ 400.00
___ three months	\$ 920.00
___ four months	\$1440.00

X (b) Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

5. TOTAL FEE DUE

The total fee due is:

Appeal brief fee ___\$320.00___

Extension fee (if any) _____

TOTAL FEE DUE ___\$320.00___

6. FEE PAYMENT

___ Attached is a check in the sum of \$ _____

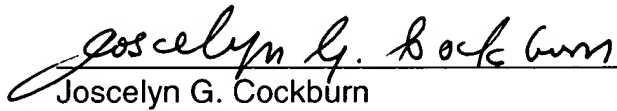
X Charge Account No. 09-1990 the sum of \$320.00
(a duplicate of this transmittal is attached)

7. FEE DEFICIENCY

☒ If any additional extension and/or fee is required, this is a request therefor and to charge Account No. 09-1990.

☐ If any additional fee for claims is required, charge Account No. 09-1990.

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